21414892

Illinois
Environmental
Protection Agency

Division of Public Water Supplies
2200 Churchill Road
P.O. Box 19276
Springfield, IL 62794-9276

I363.61
MAXI
c.3

ILLINOIS DOCUMENTS
MAR 30 1990
ILLINOIS STATE LIBRARY

MAXIMUM SETBACK ZONES

Community Water Supply Groundwater Quality Protection

UNIVERSITY OF ILLINOIS-URBANA
3 0112 122592568

Printed on Recycled Paper

Under section 14.3 of the Illinois Groundwater Protection Act (IGPA) counties and municipalities utilizing any community water supply well are authorized to establish a maximum setback zone, up to 1,000 feet, around their well(s). The law established minimum setback zones of either 200 or 400 feet.

BENEFITS OF ESTABLISHING MAXIMUM SETBACK ZONES

- Prevention of contamination by siting restrictions up to 1000'
- Regulation of existing and new potential sources of contamination
- Awareness of sensitivity of the zone to contamination problems
- Exercise of local controls and authorities

WHO CAN ESTABLISH A MAXIMUM SETBACK ZONE?

Municipalities or counties served by community water supply wells are empowered to inact maximum setback zone ordinances. If the community water supply well is privately or investor owned, a municipality or county served by that well can submit an application on the behalf of the owner.

HOW TO APPLY FOR A MAXIMUM SETBACK ZONE

Counties or municipalities may apply for a maximum setback zone by filing an "Application for Agency Review of Lateral Area of Influence Determination" with the Agency. A draft ordinance must be included with this application. These

I363.61
MAXI
c.3

ILLINOIS STATE LIBRARY
3 1129 00570 2865

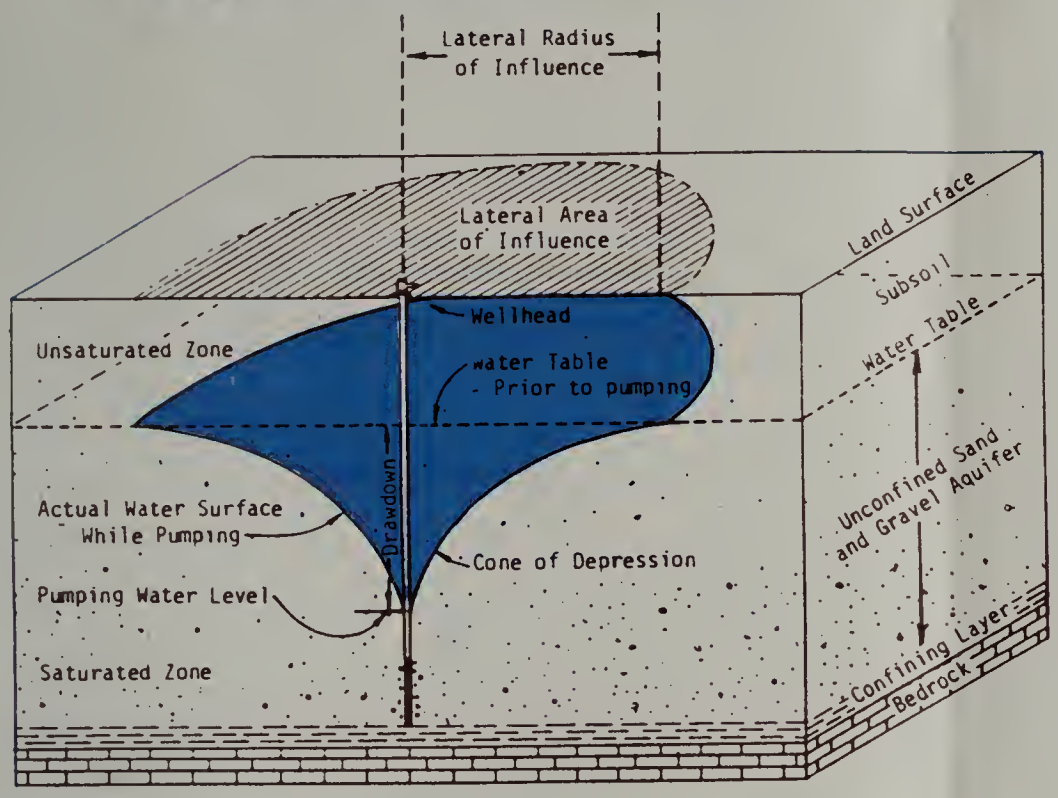


Figure 1 illustrates the cone of depression and lateral area of influence produced by pumping a well under normal operating conditions. The lateral area of influence consists of the area on the surface of the water table which is affected by the cone of depression and the land surface above this area. The radius of influence is the horizontal distance from the center of a well to the limit of the cone of depression. In other words, it is the distance from the well to where there is no drawdown in water level.

applications and example ordinances are available upon request from the Agency. The IEPA has developed rules (Subtitle F, Part 671) and a workbook that can be used to determine the lateral area of influence created by pumping a well under normal operating conditions. If the lateral radius of influence is greater than the 200/400 foot minimum setback zone, the well is eligible for a maximum setback zone.

WHEN IS A MAXIMUM ZONE IN EFFECT?

The zone is in effect after the county or municipality adopts an ordinance for each well. The county or municipality has two years after the Agency confirmation of the technical adequacy to adopt the maximum zone ordinance.

WHAT IS THE LATERAL RADIUS OF INFLUENCE?

When a well is being pumped, water in the immediate vicinity begins to flow from all directions toward the well. The reduction (drawdown) of the water level is greatest at the well and decreases with distance away from the well. The shape of the water surface around the well resembles a cone and is commonly referred to as the cone of depression. Each cone (lateral area of influence) differs in size and shape depending upon several variables including pumping rate, pumping duration and aquifer characteristics. *(See Figure 1)*

DETERMINATION OF A MAXIMUM SETBACK ZONE USING DIRECT MEASUREMENT

Determining the lateral radius of influence from a direct measurement is relatively straight forward. Many community water wells have observation wells to ascertain their pumping characteristics. When the data from an observation well is available it can be used directly. If observation wells were drilled beyond the

minimum setback zone a direct measurement of the water table drawdown can be made.

HOW TO APPLY FOR A MAXIMUM SETBACK ZONE

Interested parties can pursue a maximum setback zone by contacting the Agency and requesting the necessary rules and procedures. A workbook on how to establish a maximum setback is available upon request from the Agency. In addition, detailed procedures are covered in Appendix A through E in Part 671 Maximum Setback Zone for Community Water Supply Wells. Also the county or municipal officials who will be involved in the application process should be contacted. The following informtion will be required to complete the application:

- radius of influence distance
- aquifer test data
- geological logs and well construction details
- description of the pump test procedure or the estimation
- technique selected to determine the lateral area of influence
- draft ordinance
- signature of a county or municipal official

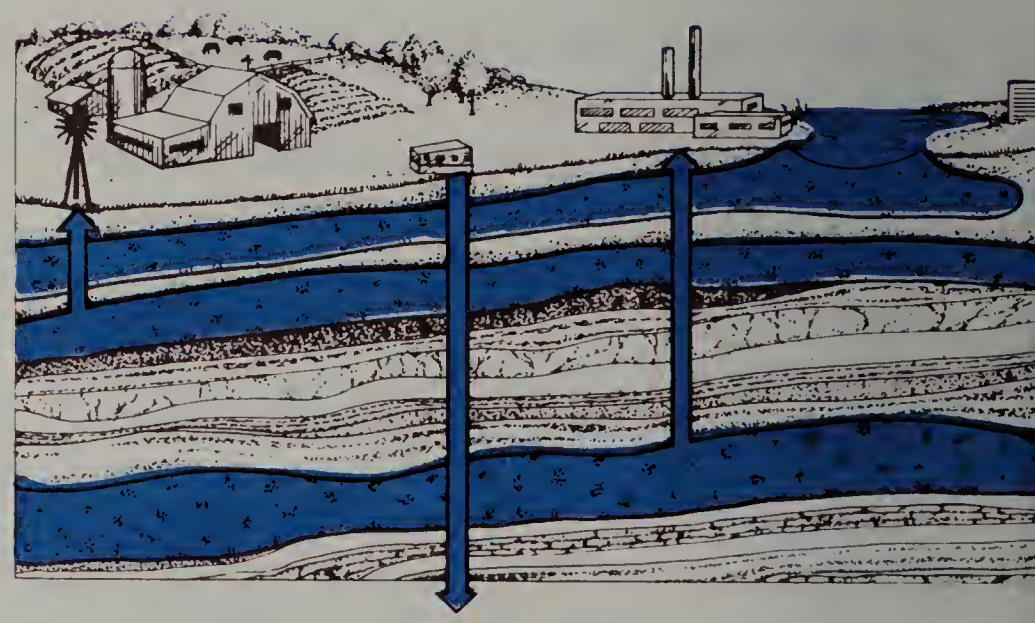
If the water supply owner does not have a copy of pump test data, copies can often be obtained from the drilling contractor or the Illinois State Water Survey. Boundaries determined by the pump test procedure are used to help shape the maximum setback zone. The Agency is required to confirm the adequacy of the determination method and a proposed ordinance prior to adoption by a county or municipality.

FOR MORE INFORMATION OR TECHNICAL ASSISTANCE CONTACT:

Hydrogeology Unit
Groundwater Section
Division of Public Water Supplies
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62794-9276
(217)785-4787

IGPA

Illinois Groundwater Protection Act



Printed by the authority of
the State of Illinois
Job No. 19448 2/90 20,000